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The North Woods.

IT is now twenty-five years since the passage of an act by the Legislature of New York providing for the appointment of seven Commissioners of Parks for the state, who were directed to inquire into the expediency of "providing for vesting in the state the title to the timbered regions lying within the counties of Lewis, Essex, Clinton, Franklin, St. Lawrence, Herkimer and Hamilton, and converting the same into a public park." That is, as long ago as 1872 there was a general recognition of the value of this region for its timber-supply, for its usefulness in preserving and maintaining the water-supply of the canals and streams of the state, for furnishing hydraulic power, and for the attraction which its picturesque scenery, its numerous lakes and its abundant game offered to the invalid, the tourist and the sportsman. This record also demonstrates that even then the attacks on the timber of this vast region had been so merciless that the Legislature had been driven to take some active interest in its preservation. In the documents prepared by these commissioners, of whom the Hon. Horatio Seymour was President, it is set forth that this broad area, once owned by the state, had been largely conveyed to purchasers who had bought it for the timber and bark it carried; that a single tract embracing more than a quarter of a million of acres had been conveyed to a corporation for five cents an acre under a scheme of speculation that was little less than fraudulent, and that the state then owned but a small fraction of the territory, and this was in detached parcels. The report also declares that the lands originally bought for their timber had been largely abandoned after this was removed as not being worth to the holders the taxes on wild lands, so that large blocks had been repeatedly sold for arrears of taxes or left in the possession of the state as not worth these claims until, in the course of time, another growth had made them desirable, when they were again bought from the state, again to be abandoned when stripped of everything worth carrying away. It was stated also that whenever a project for repurchasing this land was brought forward the owners would combine to raise the price to an unreasonable amount, so that Dr. Hough, another of the commissioners, stated two or three years later, in a Congressional document, that "insuperable difficulties toward establishing this park were found in the fact that the soil belonged chiefly to private owners, and could not be acquired without unreasonable cost."

And now, twenty-five years later, Governor Black, in his first annual message, pronounces these words of warning and reproof: "A question too long neglected is the preservation of our forests. The state, either through indifference or false economy, has been stripped of its most valuable timber lands, has allowed its water-supply to be seriously impaired, and the most wonderful sanitarium of the world to be defaced and partially destroyed. Every element of economy and foresight is outraged by this course." And he goes on to say that private individuals, taking advantage of the state's neglect, have taken possession of more than three-fourths of the area of the entire Adirondack region, and that more than five-sevenths of the proposed Adirondack Park, which includes some 2,800,000 acres, are now held as private preserves or owned by lumbermen, much of the land being exposed to appalling and disgraceful devastation by fire and axe. When we remember that during all these years the destruction of these forests has been the theme of public discussion in the press and of reports by commission after commission, and that it has furnished matter for legislative oratory and action at every session, the result can hardly be pronounced encouraging. The report of Mr. Seymour's Commission stated that the ruin was going on unchecked, and it has been going on ever since. It seemed to the early commissioners that the land could not be acquired without unreasonable cost to the state, and it will cost the state ten times as much to-day. But something has been gained. A constitutional amendment has been adopted which, in a blind, uncivilized way, attempts to save the forests on the state lands by forbidding anybody to use them. Of course, neither state forests nor any other forests can have any direct economical value unless their products are gathered any more than a farm can be made profitable under a prohibition against harvesting any crops. The exclusion of the axe from the state woodlands, provided they are not devastated by fire or water, does, however, give them a certain assured value as a protecting cover to the land, and the people of the state showed that they were in earnest in preserving this bulwark against destruction of our state forests when they voted almost unanimously at the late election against nullifying or changing the constitutional provision. Another cheering symptom is found in the vigorous words of the new Governor, which prove that he has given some personal thought to the matter, for no more convincing statement as to the need of the preservation of these forests can be found in any public document. Following the words already quoted, Governor Black says:

> More than four hundred and fifty million feet of wood and timber are cut, and more than one hundred thousand acres are stripped every year. This work of devastation is progressing fast. The banks of the lakes and rivers, and all sections accessible from either, are ravaged at such a pace that but few years more can elapse before that region, in many respects the most wonderful and valuable in the world, will be practically destroyed. The parts acquired or claimed by individuals are the best. A traveler through any desirable portion of that country is sure to be met with the charge of trespassing, for the cases are rare in which the title of the state to a desirable tract is acknowledged. Some time this deplorable condition must be rectified. Every year the loss to the state grows larger, in all cases difficult, and in some cases impossible, of recovery. The land is steadily and rapidly increasing in value. The bogus title burrows further out of sight the longer it is let alone. Witnesses die, and the only thing sure to increase is the encroachment of individuals upon the domain of the state. The enlargement of the canals will require more water, and the demand in every direction is increasing, while the supply is steadily falling off. A subject of such magnitude should not be postponed, nor conducted with the halting method which is too apt to distinguish public enterprises, in which large appropriations afford convenient resting-places in which office-

holders may grow old. Not long ago the state appropriated a million dollars to preserve the beauties of Niagara Falls. That subject is without significance compared to the Adirondack forests. Every consideration of health, pleasure, economy and safety urges the speedy consideration of this subject, and such consideration should include appropriations adequate to ascertain the nature of the titles adverse to the state, to recover where the titles are insufficient, and to purchase where they are valid. Any other course would be false and unwise economy.

It will be observed that the Governor has come to a point which his predecessors should have reached long ago. Commissions and reports and constitutional restrictions will be unavailing so long as the greater part of this region remains in private hands. The first thing needed is money to secure these lands forever for the state. This is the only salvation of the Adirondack forests. The sooner these lands are acquired by the state in fee simple the better. The cost alarmed commissioners twenty-five years ago, but we can all now see that the state would have made a wise investment if it had purchased every acre then. The land will cost more to-day, and many times as much twenty-five years hence; but in the end the state must own the North Woods, if there are any woods to own, so that every dictate of wisdom suggests that their devastation should be arrested at the earliest possible moment.

Two Years After the Great Freeze in Florida.

THE cold wave which swept over Florida in December of 1894 and February, 1895, left the orange growers of that region almost stunned by the calamity, but they were so ignorant at the time of the real damage accomplished, and there was so little information to be obtained from those who had passed through a like experience, that they were at a loss what to do in order to recover from the effects in the shortest time. Mr. H. S. Williams, a prominent orange grower of Rockledge, has therefore written for the *Indian River Advocate* a careful and minute account of the calamity, which is of great value from an historical point of view, and to this he has added some advice, based on experience, which will be useful in case the orange growers of Florida should ever again suffer from such a disaster. The whole article is of interest, even to the general reader, but our available space compels us to condense it materially.

Friday, the 28th of December, 1894, was a raw, disagreeable day, with heavy westerly winds, but there was nothing in the conditions to threaten severe frost. At sunset the thermometer stood at thirty-six, and the five o'clock mail brought word that the temperature would fall to twenty-five degrees in the northern part of the state. These figures did not indicate a destructive cold wave, but if the information had given the real temperature at Jacksonville, which was fourteen degrees, the information would have been useful. However, the record of my thermometer, together with the report from Jacksonville, satisfied me that the orange crop of the year was lost. At the break of day the thermometer marked nineteen degrees, with a north-west wind blowing hard. Ice had formed over an inch thick, oranges in the full force of the wind were frozen solid, and on Sunday morning, the 30th, the thermometer marked twenty-eight degrees and afterward rose above the freezing point. In about two weeks the fruit and leaves had nearly all dropped off the trees, and a week later they began to show signs of life. By February 1st shoots had grown from four to six inches, the older leaves were half grown, and many blossoms on the older trees had just opened. The young trees did not fare as well, and in a small three-year-old grove, fully exposed, the trees nearly all had their bark split along the upper part of the trunk, and half of them would have died without any further mishap.

On the 1st of February I was satisfied that I would have three-fourths of a crop, and while the year's income was lost the outlook was not utterly discouraging. Then came the second arctic wave which destroyed the prospects of a crop for years to come. On Thursday, February 7th, 1895, the wind was westerly again and blew as heavily as it did on the 28th of December, but it was not as cold. At dusk the thermometer marked fifty degrees and a meagre weather dispatch gave no warning that the temperature would fall even to the freezing point. During the night, however, it fell rapidly, and at daybreak marked twenty degrees as before. The temperature all day was near the freezing point, and on Saturday morning it was again nineteen degrees, with ice an inch thick. Saturday it moderated somewhat, and by night the thermometer marked forty degrees, but fell again to ten degrees during the night. This unprecedented fall of thirty degrees in one night was, of course, beyond all former record, and could not have been anticipated without some definite information from the Weather Service Bureau. No one knew how bad we were hurt or what it was best to do, but on Saturday I wrapped the trunks of twenty of my largest trees with burlaps, taking care to protect the bark fully from the sun. On Monday I cut several trees down to the first branch and waited, with such a show of patience as I could command, to see what nature was going to do toward recuperation. It was a terrible ordeal, for the suspense was one of months, for even in the following June we could not tell how much damage had been done, and, in fact, after a lapse of two full seasons I am still uncertain. As a rule, my trees were budded low and on sour stock. In April they began to show signs of life, varying from two to fifteen feet above the ground. Practically all the branches were killed back to the main trunk. Some trees were killed to the ground on the south side, while they threw out vigorous sprouts for two or three feet above the ground on the north. East of the ridge that runs through Rockledge hammock parallel to the river ninety per cent. of my trees threw out sprouts above the bud. Most of the young trees west of the ridge were sawed off even with the ground as soon after the February freeze as possible. Some of the sprouts on the trunk, where the wood did not have vigor enough to sustain life, being a mere shell under the bark, have died during the past years, but not as many as I expected. The crop for the season of 1894-95 was ten oranges. The crop for 1895-96 may be twenty boxes. Owing to the larger portion of roots compared with top there is an excess of sap and food taken up, and the fruit is somewhat coarse. Some of the trees had the red rust, which caused the fruit to split, but this will rapidly disappear as the roots and tops become balanced. The present condition of the trees is satisfactory in the main, and the fruit-bearing wood should give us next year a fair crop, say twenty or more boxes where we now count one. The rapid growth of this new fruit-producing wood will tax our ingenuity to keep it from being crushed by its own weight, as the sprouts have in many instances only a thin shell of live wood to give them strength. These sprouts grow at an angle of forty-five degrees, and when weighted with fruit will need to be supported with the greatest care, or the high winds will break them off, and if exposed to a West Indian cyclone it will be impossible to save them. Buds put in during the summer of 1895 have grown prodigiously, and will soon commence fruiting. The rich, dark appearance of the trees as they glisten in the bright sunshine gives us hope for the future, although much time must elapse under the most favorable conditions before we can fully recover our lost revenues.

In the light of experience I would change my plans but little. If all the trunks of my trees had been well wrapped the morning after the second cold wave, or, better yet, the day before, if the Weather Bureau had given us notice in time, this would have proved of incalculable benefit. I would then cut off the lower branches and the top immediately above the fork. Trees treated in this way are alive on all sides of the trunk, and the branches and sprouts thrown out are more firmly united with the trunk than any others. I would cut down close to the ground every tree less than six years set and draw the dirt away from the collar, so as to expose the surface roots slightly to the sun. As soon as possible I should plow the grove and break as many of the roots as possible, and have a man with a keen grub-hoe following to cut off smoothly the ends of all such roots. I would advise those having small groves to dig a trench ten inches deep, grading the distance from the trunk according to the size of the tree and cutting off all the roots. A few trees treated in this way a year after the cold weather show a marked improvement in growth during the second summer. As soon as the sprouts from the ground are large enough insert the buds or get them started as soon as possible. If this is delayed until the next spring the buds will make too rank a growth. If the ground is in fairly good condition I would apply no fertilizers for two or three years at least. In a young grove where the trees were cut to the ground I would cultivate it and keep it clean, while in older groves, after the first plowing, a circle hoed around the trees will answer every purpose. There is a diversity of opinion as to the number of buds that it is necessary to let grow, and it

will take the experience of years to decide which plan is the best. In my younger trees, where the stump will probably heal over, I have let only one grow, as I much prefer a single trunk. In the case of old trees killed to the ground it will be a temporary makeshift at the best to get a few oranges while the newly set tree is growing, so that it makes but little difference whether two or half a dozen are grown. I am taking advantage of this opportunity to change varieties to the fullest extent, discarding all those that have not proved the best for this locality. I have rebudded all my Navels; have discarded most of the Maltese and imported varieties generally; have reduced the number of Tangerines one-half and added largely to the number of Grape-fruit grafts. I have budded almost exclusively with our best home varieties, adding a limited number of Boones and Parson Browns for early, and Hart's Tardiff and Valencia for late varieties. Nearly every grower has one or more trees in his grove which bear a superior quality of fruit, and from these trees he should take his buds. Indian River oranges have a special quotation in the market, and it is necessary for the reputation of this locality, as well as for individual success, to keep the quality of fruit up to the standard and improve it at every opportunity.

Conifers on the Grounds of the Kansas Agricultural College.—III.

THE RED CEDAR, EUROPEAN LARCH AND OTHERS.

THE Red Cedar, Juniperus Virginiana, has been quite extensively planted, probably next to the Scotch and Austrian Pines in point of numbers, and in general its growth has been very satisfactory. This might have been expected since it is a native of this region. The principal objection to it has been the extent to which it was infested with Gymnosporangium macropus. The trees become covered with the brown knots due to this fungus, and after a rain in the spring or early summer are fairly yellow with the gelatinous spore-masses. Before 1895 some desultory attempts were made to pick off these balls, but with no very satisfactory results. In that year, however, a group of Cedars was selected and all of the balls which appeared, even down to the size of a pea, were carefully removed. The result was so encouraging that the practice has been extended to most of the trees on the grounds, with the result that the fungus has been greatly reduced. It is hoped that by continuing this practice systematically for a number of years they may be practically freed from it. Eight Cedar-trees planted in 1872 on the lower part of the farm, where the soil is deep and rich, now average as follows: Height, 31½ feet; diameter at the ground, 13 inches; at 2 feet, 11 inches, and at 6 feet, 9 inches. In 1888 these trees averaged 11½ inches in diameter at the ground, and 8 inches at 6 feet. Thirty-five trees set in groups about the lawns in 1884, and then about 4 feet in height, now average 18¾ feet in height, 8½ inches in diameter at the ground, 6½ inches at 2 feet, and 4¼ inches at 6 feet. Another group of forty-seven trees set in the spring of 1888 at three years old now average 9 feet in height, 3 inches in diameter at the ground, 2¼ inches at 1 foot, and 1¾ inches at 2 feet. The soil is here a clay loam of about ten inches in depth, underlaid by a rather friable red clay subsoil.

The European Larch has not been extensively planted here, but three rows of them stand at the extreme eastern edge of the college premises, where the soil is very deep. They were set in the spring of 1888, and when bought were some sixteen inches in height, but at setting they were cut back nearly to the ground. For the first three years they made comparatively little growth in height, but sent out long side branches, spreading about irregularly over the ground. In the spring of 1892, however, they began to send up strong leaders, and since then they have increased rapidly in height. The three rows above mentioned, some thirty odd trees, now average 16 feet in height, 5½ inches in diameter at the ground, and 3 inches at 6 feet. They seem perfectly hardy and are certainly worthy of more extended trial.

Among other conifers which have been tried in limited numbers, the following deserve mention: The Bald Cypress, Taxodium distichum, is represented by a single old tree set in the spring of 1873, and a number of younger ones set in 1884. They cannot be recommended for general planting, as many of the younger trees have died, and there seems to be a decided tendency for the leader to die, and thus destroy the beauty of the tree, but in some locations they have done well. In 1888 the old tree measured 23 feet in height, 16 inches in diameter at the ground, and 9 inches at 6 feet high. It now measures 24½ feet in height (the leader having died since 1888), 20¼ inches in diameter at the ground, and 12 inches at 6 feet.

The Ginkgo-tree is fairly hardy when grown in sheltered situations, and, although very slow of growth, it is well worth planting where a tree of peculiar habit is desired. A specimen near the college greenhouse, set in 1884, now measures 11 feet in height, 4½ inches in diameter at the ground, and 3 inches at 2 feet.

The Colorado Silver Fir, Abies concolor, and the Siberian Fir, A. Sibirica, are apparently quite hardy in favorable locations, but so slow of growth as to be valuable only for ornamental planting.

A number of Arbor Vitæs have been tested, but only two are worthy of mention, and these should be planted sparingly and only in favorable, sheltered locations. They are Thuya occidentalis, the American Arbor Vitæ, and the Siberian, T. Sibirica, really a form of the American species.

Agricultural College, Manhattan, Kan. *F. C. Sears.*

Foreign Correspondence.

New Garden Plants, 1891–1895.

INSTEAD of reviewing the new plants of the year just ended, I propose to devote this letter to a review of the best of the plants introduced during the five years from 1891 to 1895, inclusive. Plants that promise well when first obtained often turn out failures on further acquaintance, and only a small percentage of the plants that are introduced as likely to prove useful in the garden really do so. This may be due to numerous causes. the three principal of which are want of attractiveness, difficulty of cultivation and slowness of increase. Many Orchids fall under the third category, especially those of hybrid origin. Thus hybrid Cattleyas raised twenty years ago are still rare. On the other hand, a few of the quick-growing hybrids, such as Calanthe Veitchii, Cypripedium Leeanum, Phajus Cooksoni, Disa Veitchii and D. Kewensis, are now so abundant as to be available for all collections.

According to the lists of new plants prepared each year at Kew and published as an appendix to the *Kew Bulletin*, the average number of new introductions is about 400 per annum. For five years this makes a total of 2,000. I have been through the whole of these, and noted all those plants that may now be considered established garden favorites, or on the way to becoming such. These are enumerated below. It is possible that some of those excluded will by some be considered as worthy as some of those enumerated, but, so far as I can judge from experience and observation, the selection here made is not far from the mark.

ORCHIDS.—For obvious reasons hybrids of garden origin are excluded. They are, as a rule, represented by only one or two examples, the exceptions being the hybrid Disas. Among tropical Orchids I find only Cypripedium Charlesworthii, a first-rate garden Orchid in every sense. C. Exul also deserves mention, but I question if C. Chamberlaini does. It is a remarkable Orchid, lacking, however, in those qualities required by the ordinary cultivator. Cochlioda Noetzliana is a good second-rate Orchid for the cool house. Catasetum splendens, in all its numerous varieties, is a rich addition to the garden representatives of this singular genus. Dendrobium Hildebrandii grows freely and flowers profusely, but its flowers lack the charm of color, and I doubt if it will be accepted as a garden Orchid. Eulophiella Elizabethæ is a beautiful Orchid when properly grown, but I hear it is a failure in many collections, and this will

prevent its becoming a favorite. Habenaria carnea is distinct and pretty in color, and is easily grown. Lælia tenebrosa is the pick of the introductions among Cattleoid Orchids, and L. Lucasiana also deserves mention, although it has not proved a free bloomer so far. Oncidium dichromum improves on acquaintance, but it belied its description when first it flowered. Renanthera Imschootiana is a beautiful Orchid, and if only it prove a free flowerer it will become one of the most popular of the East Indian introductions.

Stove Plants.—There are about a score of these to be added to what we possessed previous to 1891. They are Aristolochia Gigas Sturtevantii, Allamanda Williamsii, Begonia decora, B. Rex × Socotrana, B. Gloire de Lorraine, B. President Carnot and B. Rajah. These are all really excellent plants which I have seen in superb condition recently. Bougainvillea glabra Sanderiana is the freest-flowering of all Bougainvilleas. Dracæna Godseffiana and Sanderiana are valuable additions to ornamental-leaved stove plants. Dermatobotrys Saundersæ is a pretty winter-flowering pot shrub which is certain to find many admirers. It has smooth brown stems and numerous clusters of tubular salmon-red flowers, produced while the plants are leafless. It was introduced from east Africa to Kew a few years ago. Heliconia illustris and its variety splendens are brilliantly colored plants which pay for liberal treatment and a high temperature. Impatiens auricoma makes a shrub a yard high and flowers very freely when planted out in a border. Nepenthes mixta is the best of the hybrid Nepenthes raised by Messrs. Veitch, or, at any rate, it is as good as their grand hybrid N. Mastersiana. Maranta Sanderiana is a tall handsome plant with richly colored purplish leaves. Ptychoraphis augusta and Thrinax Morrisii are two of the most distinct and elegant of Palms introduced within the last twenty years.

Cool-house Plants.—There are very few additions in this department. The best are the two yellow Richardias, Elliottiana and Pentlandii. Alberta magna is still on trial. I saw a beautiful example of it in flower in the Glasgow Botanic Gardens a few weeks ago. It will probably prove most satisfactory when grown as a shrub in the open air in places where it will be hardy. Crotolaria longirostrata is a pretty winter-flowering species which is grown in pots at Kew. Incarvillea Delavayi is not satisfactory as a pot-plant, but I hear it is beautiful in some gardens in the open air. Primula imperialis will always find friends on account of its gigantic proportions and its interesting character. Only three Ferns deserve mention; they are the hybrid Polypodium Schneiderianum, Pteris longifolia Mariesii and Alsophila atrovirens.

Hardy Herbaceous Plants.—There are many of these recorded as new and interesting, but very few of them have found favor. Calceolaria alba is a charming perennial of special interest to the breeder. Chrysanthemum Nipponicum is a hardy perennial two feet high, but as it flowers at the end of the year it requires to be lifted in the autumn, or it should be grown in pots along with the common Chrysanthemums and treated the same. It produces beautiful Marguerite-like flowers three inches across. Cineraria maritima aurea variegata is a prettily variegated plant, useful either for bedding or for pot cultivation. Dianthus callizonus is a charming little species with large flowers and is a perfect rockery plant. Hemerocallis aurantiaca major is the largest and best of the day Lilies. Iris Sari, Lilium chloraster, L. leucanthum and L. Lowii and Kniphofia Nelsoni are worthy border plants. Nemesia strumosa is better when grown in pots in a frame than as an open-air annual. Marliac's new hybrid Nymphæas are only prevented from becoming as common as our white Nymphæas by their slowness of increase and consequent high cost. Physalis Franchetii is as easily grown and fruits as freely as P. Alkekengi, its fruits being three times as large. Senecio saggitifolius will find favor where it can be grown permanently out-of-doors. Tulipa Billietiana is a handsome and distinct addition to the Tulips of the Gesneriana class. I have omitted Calochorti only because the difficulty experienced in their cultivation here has so far proved a barrier to their becoming popular.

Trees and Shrubs.—Very few good things are recorded among these, but what there are stand out prominently. We have nothing better in the garden than Spiræa Bumalda Anthony Waterer, and no more beautiful white-flowered small shrub than the hybrid Deutzia Lemoinei. Betula Maximowiczii, for which we are indebted to Professor Sargent, who introduced it from Japan, is a distinct and striking addition to the Birches. Vitis Coignetiæ is now in every good garden.

London. *W. Watson.*

New or Little-known Plants.

Pseudotsuga macrocarpa.

THIS tree is, perhaps, the most characteristic feature of the scanty forests which clothe the western and southern slopes of the mountains which, extending in the arc of a circle from Ventura County, California, to the southern borders of the state and forming nearly a continuous range, are known as the Saint Emilio, the Sierra Pelona, the Sierra Madre, the San Gabriel, the San Bernadino, the San Jacinto and the Cuamaca Mountains. The rainfall on these mountains is small and unequally distributed through the year; and the forests below elevations of five thousand feet are poor and scanty, and are composed of Junipers, Pinus attenuata, Pinus Coulteri, occasionally descending from the higher altitudes, where it is more at home, Pinus ponderosa, Quercus Wislizeni, Quercus chrysolepis and the large-coned Pseudotsuga, which, so far as is now known, is confined to these mountains. It is common here above the banks of streams and on the steep slopes of narrow ravines between three thousand and five thousand feet elevation, and is able occasionally to maintain a foothold on the drier ridges above, although it does not form continuous groves unless aided by the moisture held in depressions in the mountain-sides, which become torrents at certain seasons of the year. In such favorable positions the large-coned Pseudotsuga occasionally attains the height of eighty feet, with a stout trunk sometimes three or four feet in diameter, although trees of this size are exceptional, and this species rarely grows to a greater height than forty or fifty feet. It is a distinct tree, with long, somewhat pendulous and remarkably remote branches which form a broad, open, pyramidal head, foliage of a peculiar blue-gray color, and cones six or eight inches in length. The illustration on page 25 of this issue, made from a photograph taken in winter of a part of the outer wall of the Sierra Madre Range, now in the San Gabriel Reservation, shows the habit of this tree and the manner in which it spreads up the sides of ravines. For the opportunity to use this photograph we are indebted to the courtesy of Mr. Abbot Kinney, of Los Angeles, California, who has sent us an interesting collection of views taken in the reservation.

Pseudotsuga macrocarpa, discovered in 1858 on the mountains near the San Felipe by Lieutenant Ives's Exploring Expedition, was first described by Dr. Torrey in 1860 in Ives's "Report on the Colorado River in the West" as Abies Douglasii, var. macrocarpa. It has usually been considered a variety of the Douglas Spruce, but Mr. Lemmon has considered it specifically distinct, and his opinion appears to be well taken. From the Douglas Spruce it differs in its proportionately longer and more remote branches, in its shorter and stouter winter-buds, and in its shorter blue-gray, somewhat twisted and sharply pointed leaves, those of the Douglas Spruce being obtuse. The cones are from six to eight inches long, or fully twice as long as the largest cones of the other species, but the bracts are proportionately shorter. These characters are constant, and I have not been able to find a tree which appears intermediate in character between the two species, which, so far as I know, do not grow together on the same mountain ranges.

Pseudotsuga taxifolia does not extend south on the Sierras below the head of King's River, or to within a hundred miles from the territory occupied by Pseudotsuga macrocarpa, and it does not cross the Colorado Desert from the east. If the two trees do grow together it is on the mountains of Ventura or Santa Barbara counties, the southern limits of the range of Pseudotsuga taxifolia in the California coast ranges being undetermined.

Pseudotsuga macrocarpa is, I believe, still unknown in cultivation. It will probably never be valuable for its timber, but in hot, dry countries like southern California or those bordering the Mediterranean it may prove an interesting and attractive inhabitant of ornamental plantations. *C. S. S.*

Fig. 5.—Pseudotsuga macrocarpa on the San Gabriel Forest Reservation.—See page 24.

Cultural Department.

Vegetable Notes.

Peas.—These are among the most delightful products of the garden, but since they lose their flavor very quickly after having been picked, none of the early offerings from southern fields can compare with those grown at home. The first dish of peas is, therefore, one of the events of the season, and it was only a few years ago when any gardener in this latitude was considered enterprising if he had green peas with his roast lamb on the 4th of July. Varieties have been produced, however, in recent years which will ripen here early in June, and these, too, of the wrinkled kinds, which are alone fit to plant for home use, since the hard, round, bullet peas are altogether inferior in quality, from lack of sugar and other elements. The difference between Sweet corn and ordinary Field corn is not greater than that between the wrinkled peas and the round peas. For many years I have planted a row of Alphas just as soon as the ground could be worked in the spring, and ten days later I have planted on the same day Alpha, Premium Gem, McLean's Advancer and Champion of England. These would follow each other in ripening, so that by planting three or four more successions of Champion of England a week apart I would have peas from early in June until the mildew ruined them. Unfortunately, Alpha has become so mixed and degenerated that it can be no longer trusted, but experience with Nott's Excelsior shows that it will be fit for the table about as soon. It is a very dwarf grower, being hardly more than a foot high, and it bears abundantly pods which are tightly filled with peas of the best flavor. McLean's Advancer, an old variety, still holds good for second early. Stratagem, Telephone, Heroine and Admiral have become popular varieties, but a well-selected strain of Champions I still find the most trustworthy. The climbing varieties should have brush or netted wire before they fall down. Deep planting, rich, moist soil and clean culture are the essentials of success. After the Peas have well started, a good mulching helps them materially.

Beans.—Of Bush Beans, those with round pods, whether they are light-colored or green, are usually the most tender and best-flavored. Different varieties of the Black Wax, Kidney Wax, Refugee and Valentine make compact plants without any runners, having full pods that are slow to become stringy. A year ago this journal contained some notes on the cultivation of garden Beans by Professor Tracy, which have proved of great value to me, as they laid down principles which furnish the reasons for cultural practice. Although these plants grow rapidly when well fed and in the proper kind of soil, yet they are quickly discouraged by any untoward happening or any injury, especially to their roots—that is, the plant, owing to its lack of recuperative power, will be killed or, at least, stunted by any such injury to the root as would make a Lettuce plant or Corn plant grow all the faster. Standing water

about the roots is also fatal, so that a well-drained soil is essential. This lack of ability to recover from any such check means that the main crop should not be planted until the danger of a chill is over, although a few hardy sorts like the Black-eyed Wax may be planted rather early. To avoid injuring the plant and its roots, the soil ought to be made very fine by deep spading, with well-rotted manure thoroughly mixed in when necessary. A dressing of bone-dust and ashes before the crop is planted is also desirable, since the Bean plant needs potash and phosphoric acid more than it needs nitrogen. The ground should be cultivated deeply and thoroughly two or three times before the seed is planted, but after the leaves appear nothing should be done except to cut down the weeds by hoeing on the surface without disturbing the roots. The same principles should be observed in cultivating the climbing varieties—that is, deep and thorough fining of the soil before the seed is sown, and then avoidance of tramping or digging about the roots beyond what is absolutely necessary.

Peppers and Eggplants.—Another suggestion of Professor Tracy's which has been very useful to me is that we should remember in caring for Eggplants, Peppers and Tomatoes, that they are annuals that have developed in tropical latitudes. In their native home they grow steadily from the time the seed germinates until the fruit ripens, and if this habit is interfered with the plants are sure to resent it. Plants like Peas which have their home in cold latitudes can remain stationary for a long time under discouraging conditions, and as soon as these are removed they will at once start into growth with increased vigor; but this is not true of these tropical plants, and therefore nothing is gained by sowing the seed until there is just time enough for them to reach the proper size for handling and transplanting when the ground has become permanently warm. If they are forced along before this and then held back by cold weather they will spindle into a soft growth and never yield a full crop.

Tomatoes.—This vegetable comes from tropical America, and it requires from 150 to 200 warm days to produce its fruit. A temperature of at least seventy degrees, Fahrenheit, is needed during the growing season of the plant, and Professor Tracy tells us that ten degrees higher than this, both in the soil and air, is required for the best maturing of the fruit. In our northern states this high temperature is only reached during August and early September, and the proper temperature for growth does not begin until the first of June, so that the season must be extended artificially by starting young plants under glass. Here the same law holds that has been alluded to in the case of Peppers and Eggplants. Nothing will be gained by sowing the seed so early that the plants become drawn and spindling, for they will suffer a material check when they are set out. In its native habitat for three or four months the plant grows every day and accumulates enough energy to produce its fruit, and then it dies from exhaustion. If we want a crop of tomatoes in late July or the first of August nothing will be gained by sowing the seed before the 10th of April, because if we give the seedlings the proper light and air and heat to keep them growing strongly, they will be large enough to transplant as early as the soil and air outside are warm enough to receive them without giving them any check. If the seed is sown on the first of March the plants would be of full size by the time it was proper to transplant them. If they have grown so slowly that at the end of these ninety days they are only large enough to set out, this means that they have not acquired that momentum of growth which is necessary to produce the best crop. Of course, there are various methods of transplanting which will forestall any wilting or check from this process, but for ordinary cultivation the seedlings may be put into small pots, shifted on as fast as possible, and while they are growing the ground which is to receive them should be well fertilized and made fine by frequent and deep cultivation, so that the plants may be set out in a warm open soil that has already been cultivated thoroughly and deeply. It is much easier and much better, from every point of view, to do this work before the plants are set out.

Onions.—Of course, the so-called new culture is the best. Seed can be sown either in the greenhouse or in a hot-bed about the middle of February, and the seedlings should be transplanted into flats and then hardened off in cold frames. Half an ounce of seed will make enough to plant a large area, enough, indeed, for an ordinary sized family. After the ground has been thoroughly worked in the spring the small bulbs should be set in rows eighteen inches apart, and six inches apart in the row. This crop is very troublesome to keep clean when the seed is sown in drills where it is to grow, but when treated in the way recommended the ground can be thoroughly cleaned before the young bulbs are transplanted and the labor will be materially lessened. Varieties of a mild flavor are desirable. Prizetaker is one of this kind. It is of good shape, and is also valuable for its long-keeping quality.

Montclair, N. J. *J. A. Newlin.*

India Rubber Plants.

THE India Rubber plant, Ficus elastica, is the most satisfactory tropical plant in general cultivation, as it can be grown by everybody successfully, or, to put it more exactly, it is very tenacious of life, and in all positions in the dwelling, greenhouse or conservatory it flourishes with little attention. It revels in abundance of water, yet a temporary dryness distresses it little. Sometimes a fall of temperature will cause it to drop its leaves, making the plants rather unsightly. Judging from the number of leggy and bare plants seen in living-rooms, as well as in greenhouses, it does not seem to be generally known that the production of lateral shoots, or new branches, and bushy specimens is the simplest of horticultural operations. Unless an India Rubber plant is bare in places a single-stemmed specimen, up to five or six feet, is usually the most satisfactory. For larger specimens, or when plants are denuded of leaves, branches are most to be desired. To produce these it is usually recommended to pinch out the leading shoot. This will cause branching, but the new growths are not apt to break where they are wanted most, and, besides this, the loss of the leader spoils the plant as a specimen. The simpler practice is to score the main axis where new growths are desired. By making an incision across the stem with a thick-bladed knife through the bark and slightly into the hard wood, a flow of sap will ensue. This will soon be followed by a callous, and from the edge of this a bud will usually be found in a few weeks. This is simply an exemplification of the well-known fact that buds may be formed from any part of a plant body, and we are all familiar with their occurrence, especially on the stems and roots of hardwood plants. They are more apt to occur near callosities, the result of injuries, or near the axis of a leaf, where food is naturally most abundant. It will usually be most satisfactory to score the India Rubber plant above a leaf scar, and a large proportion of the cuts will prove effective. My observation seems to show that the new buds progress the most rapidly on the part of the stem best lighted, and that the growths are made as rapidly under ordinary house culture as in the greenhouse.

Every one is familiar with the usual practice of shortening India Rubber plants by wrapping sphagnum around the stems where roots are desired. By keeping the sphagnum moist, roots are soon emitted, and the upper shoot may be taken off and planted. They are also propagated in the greenhouse by using single leaves with a portion of the stem, plunging them in sand and keeping at a high temperature. It seems strange that a score kept dry will insure a bud, but if wrapped in a moist medium will produce roots. A ready way to shorten these plants in summer is to bank the earth up the stems, and use the new roots formed instead of the old ones. In this era of rubber-tired wheels, India rubber has become commercially of increasing importance, and the demand for the higher grade of the product is especially urgent, as the lower qualities quickly disintegrate after soft vulcanization. I am told by experts that there is no certain test of the commercial gum, though fine dry "upland" Para gum usually produces good results, yet the industry is always subject to uncertainty from our lack of knowledge of the constitution of this substance. I know of one concern which lost a fortune and its reputation for certain finished goods, which it had maintained for a number of years, because they had unwittingly bought gum from some section where the juice had a different structure, rendering it unfit for vulcanization, yet in appearance and working no expert could determine the difference. We progress rather faster in philosophical deductions than plant-knowledge.

Elizabeth, N. J. *J. N. Gerard.*

Seasonable Work.

AS the days lengthen, signs of growth will be seen among various plants that have been more or less dormant for some months past, and this means that the time for repotting, dividing and propagating is at hand. Caladiums and Alocasias, after their needed winter rest, are about to start, although the foliage of Alocasias does not die off entirely from some of the species, as it does with Caladiums when they rest. To economize space, many growers shake out Caladium-bulbs in the fall and store them in pans or boxes of sand under the stage

in a warm house, and give them water enough to prevent dry rot during winter. But as soon as the eyes show signs of starting, the roots should be brought out into the light and divided with a sharp knife, and the cut surfaces dipped into slaked lime to prevent decay. Water should be given sparingly until some new roots are made, when the young plants should be set in small pots, using a rather sandy, but rich, compost. They require a warm and moist atmosphere, and should be repotted before the plants become at all stunted. Alocasia Jenningsii and A. Marshallii, species of moderate growth, are deciduous, and thrive under the treatment suitable for Caladiums, but some of the stronger Alocacias, like A. Sedenii, A. metallica, A. Veitchii, A. macrorhiza and A. zebrina, usually retain some of their foliage, and naturally require more water. They also need more drainage in the pots or pans and a very open compost. When starting into growth again both Caladiums and Alocasias are very likely to throw up flower-stems, and these should at once be removed, as they tend to weaken the foliage.

The seeds of Gloxinias, being very fine, should be sown on the surface of the soil, as Fern-spores are. A safe soil is composed of peat, loam and sand in about equal parts, with some chopped sphagnum mixed through it to keep it more open. Gloxinia-seeds should be placed in a warm and moist atmosphere, and should be covered with a sheet of paper until they germinate. This prevents the soil from drying out rapidly, and does away with the need of much watering until the seedlings are visible. Care is needed in handling the young plants, but they are worth the attention.

With stronger sunshine Easter Lilies and the various spring-flowering bulbs will make rapid growth, and a few of the latter should be brought into heat at short intervals for a succession of flowers. With the exception of Lily-of-the-valley, a good root-growth is essential before these plants have strong fire-heat, otherwise the flower-stems will be weak and small. Aphides will be sure to find the flower-buds of Lilium longiflorum, and are best removed by an occasional dipping in weak tobacco water, a more cleanly remedy than dusting with snuff or powdered tobacco. Cinerarias, too, are specially subject to this pest and will require close watching now if the foliage is to be saved. These plants will also need plenty of fresh air to prevent a spindly growth, and as the flower-spikes appear some extra feeding with liquid-manure will be of great benefit.

New Holland plants, such as Ericas, Epacris, Eriostemons, Boronias, Darwinias and a host of others, are not only notably pretty in form and color, but also fragrant and lasting in bloom. Some of them demand a little extra attention during our hot and dry summers, yet they fully repay the trouble, and a strong point in their favor is the fact that little fire-heat is needed to carry them through the winter. It is a misfortune that they are not more generally grown. The repotting of Palms and many foliage plants had better be deferred for a few weeks, as but little growth will be gained, with the Palms in particular, by shifting them before the roots are making a decided move, and in some instances they will receive a positive check. Special care in firing is needed now, for when the temperature ranges high at night Palms are likely to be excited before their time and thus become weakened. For the species in general use a night temperature of sixty to sixty-five degrees is quite sufficient.

Holmesburg, Pa. *W. H. Taplin.*

Anthuriums.

FLOWERS of brilliant color and odd shapes, as well as rich foliage in many cases, give these tropical plants a distinction not only for decorative purposes, but for use in the conservatory with other plants. Nearly all the species do best in a temperature of from sixty-five to seventy-five degrees, which should be kept as nearly even as possible. During warm sunny days the plants need shading, since their native habitat is along the banks of streams and in dense swamps which the sun's rays hardly penetrate. Good potting material is leaf-mold, rotted sod, sand and fine charcoal; they also thrive in well-mixed peat and sphagnum, but when this is used the drainage should be carefully looked after, and they should be potted very firmly. This is a good time to propagate. Small varieties should be divided so as to leave a crown to each plant, while the tops can be cut from the taller ones with a few roots attached, and the old plants will break very readily from below. The raising of seedlings is a slow process, some varieties needing to be fertilized by hand and requiring a year for ripening the seed. The seeds should be sown as soon as they ripen in shallow pans on chopped peat and fresh sphagnum, where they will germinate in seven or eight weeks if placed in a close frame or under a hand-glass with a bottom-heat of about eighty degrees. As soon as they have formed two leaves they should be transplanted into small pots.

Of the varieties one of the most showy is Anthurium Andreanum, which bears all the year round large scarlet flowers which retain their beauty for months together. It is one of the very easiest to grow, and although usually planted in pots we have found that it does admirably in beds. A bed of peat and sphagnum twenty-five feet long and four feet wide was a wonderful spectacle four months after it was filled with these plants. Wherever one has room to spare this certainly proves in the end the most successful way to produce flowers, as we have proved by cutting hundreds of them from this bed every year, some of the spathes measuring more than eight inches long. A. Scherzerianum does better in pots. Since its roots are not as long, the plants should be set more deeply, so that the new roots will penetrate through the peat and sphagnum. A. Rothschildianum bears very profusely bright scarlet spathes mottled with white. A. Bennettii is distinguished by its long and sharply tapering spathe. A. giganteum is distinguished for the great size of its flowers, and A. maximum produces spathes from seven to nine inches long, four inches wide, and of the most intense scarlet. Among the varieties with decorative leaves are A. crystallinum, with leaf-veins of crystal white; A. triumphans, with long bright green leaves and prominent ribs of a lighter color: A. Veitchii, often called the Elephant's Ear, with leaves from two to three feet long and of a metallic hue; A. Waroquensis, with large, striking, rich green leaves of a velvety lustre and paler midribs and veins.

Tarrytown, N. Y. *William Magee, Jr.*

Window Plants.—At this season house-plants in bloom are grateful for an occasional feeding with liquid fertilizer, which gives the leaves a deeper green and increases the number and size of the flowers. Any perfect commercial plant-food can be used in solution, but cow-manure is quite as satisfactory, especially if a little ashes can be mixed with it for extra potash and the ingredients steeped in a barrel of water for several days. This liquid should then be diluted until it has the color of weak tea, for if applied too strong or too freely it is sure to injure the plants. At first the solution should not be given oftener than once a fortnight, but it can be gradually increased in frequency until it is used as often as once a week or once in five days.

Lafayette, Ind. *William Stuart.*

Correspondence.

The Best Winter Pears.

To the Editor of GARDEN AND FOREST:

Sir,—We have varieties of pears in abundance which are suitable for use between the middle of July and the middle of December, a period of five months, but it is greatly to be desired that this period should be doubled in length. The really good varieties which are available for use in winter and spring are few. The Anjou, which bears so well and regularly, I cannot keep after New Year's. Winter Nelis, which is richer in flavor, can be kept until February with very careful handling. Josephine de Malines is not as rich in flavor, and with me it has a marked astringency, although its keeping qualities are so good that it will last till late March. Easter Beurre is of first-rate quality, never ripening with me before March and keeping till April, but it has a serious defect of ripening unevenly. When the side of well-grown specimens exposed to the sun on the tree is in its best form for the table, the shaded side is often so hard that it cannot be eaten. Among the recently introduced late-keeping varieties I have made a fair test of Duhamel de Monceau, Colonel Wilder and P. Barry. Duhamel de Monceau is a fair substitute for Winter Nelis, is larger and handsomer, and is not attacked by any of the fungi to which the Nelis is showing an increasing and discouraging susceptibility. It is juicy and melting, rather than sweet, and not quite equal to Winter Nelis in quality, but still very good. It is not so even a bearer. Colonel Wilder is large, handsome, and, although it is a good pear, its quality is inferior to that of Duhamel de Monceau. P. Barry is also large and handsome; in quality equal to the best of the pears, and it is a great keeper. Its season of ripening extends through April. The tree with me, however, is a slow grower and always inclines to overbear. I have grafted it upon different standard stocks, such as Flemish Beauty, Clapp's Favorite and White Doyenne, on the last of which it has made its best growth. Some of your readers will render a real service to those of us who are experimenting in this direction with the later-keeping pears if

they would give an account through the columns of GARDEN AND FOREST of their personal experience.

Amherst College, Mass. *A. D. Morse.*

Recent Publications.

The First Account of Some Western Trees.*—I.

Lewis and Clark, in their expedition across the continent from the mouth of the Missouri River to that of the Columbia on the Pacific coast during the years 1804-1806, were the first white men to cross the Rocky Mountains within the present territory of the United States, and their geographical and natural history observations are therefore of peculiar interest. The value of the journals of these two great explorers, first edited by Nicholas Biddle, is moreover now greatly increased by the learned notes with which Dr. Coues has enriched a new edition of this classical work. Lewis and Clark were the discoverers of many interesting and important trees, and it is solely with reference to the trees mentioned in their journals that we now propose to examine this new edition.

Following their journey we find (i., 63) that when the party had reached a point 690 miles above the mouth of the Missouri, on the 30th of July, 1804, the Lynn, among other trees, was noticed. This is referred by Dr. Coues to Tilia pubescens, a species, however, confined exclusively to the coast region of the south Atlantic states; and it is evident that the Linden of the Missouri bottoms was Tilia Americana, our common northern species. On the 16th of September (i., 119), not far from the confluence of the White River with the Missouri, the party was encamped "in a beautiful plain, with timber thinly scattered for three-quarters of a mile and consisting chiefly of Elm, Cottonwood and some Ash of indifferent quality, and a considerable quantity of a small species of White Oak." This last Dr. Coues refers to Quercus undulata, var. Wrightii. More probably, however, the Oak seen here was Quercus macrocarpa, which extends farther to the north-west than any of our Atlantic species; and this determination seems to be confirmed by the description of the cup of the acorn "which is fringed on the edges and embraces it about one-half." Quercus undulata and Quercus Gambellii, the two Rocky Mountain White Oaks, which are often confounded in some of their forms, are not known east of the continental divide north of the Platte River in Colorado. On October 2d the party fell in with a Mr. Valle, a French trader, who had visited the Black Hills, which he described to them as covered with great quantities of Pine (i., 150). This is Pinus ponderosa, and probably the first authentic allusion in literature to this widely distributed tree, which was not described technically until the appearance of Loudon's *Arboretum* in 1838. Sergeant Gass, in ascending White River on September 15th (i., 117), had seen, however, Pine burrs and sticks of Birch floating down the river. These Pine burrs must, of course, have been the cones of Pinus ponderosa from the pineries of north-western Nebraska.

On April 12th of the following year (i., 268), after the winter passed near the Mandan villages, a species of dwarf Cedar which "spreads its limbs along the surface of the earth, which is almost concealed by its closeness and thickness and is sometimes covered by it, was noticed above the mouth of the Little Missouri." Judging by the description of its leaf, which "is more delicate than that of the common Cedar, though the taste and smell are the same," it is, no doubt, rightly referred by Dr. Coues to Juniperus Sabina, var. procumbens, which ranges westward to the eastern foot-hills of the northern Rocky Mountains.

The Ash-tree seen on April 20th (i., 277), near what is now the eastern borders of Montana, must certainly have been the Green Ash, Fraxinus Pennsylvanica, var. lanceolata, as doubtfully determined by Dr. Coues; and in the same paragraph there is a reference to Service-berries, being the first appearance in literature of the western species of Amelanchier, described many years afterward by Nuttall as Amelanchier alnifolia, unless, as we suspect, the berries, "which my people called poires, and were of a purple hue, somewhat bigger than a pea, and of a luscious taste," found by Alexander Mackenzie in August, 1789, to the north of Slave Lake, were derived from this Amelanchier (*Voyages*, 107). Under the entry of Wednesday, July 17th, 1805 (ii., 419), the western Amelanchier is shown to differ in some points from that of the United States; "the bushes," we are told, "are small, sometimes not more than two feet high, and rarely exceeding eight inches. They are proportionally small in their stems, growing very thickly, associated in clumps. The fruit is of the same form, but for the most part larger and of a very dark purple."

On the 11th of May (i., 306), being in Montana, the party saw and visited "some high hills on the north side, about three miles from the river, whose tops were covered with a Pitch Pine. This is the first Pine we have seen on the Missouri; it is like that of Virginia (which Dr. Coues calls Pinus rigida), except that the leaves are somewhat longer." This new Pine was Pinus ponderosa; and on May 21st (i., 318) the country was found "broken and crowned with some Pine and dwarf Cedar; the leaf of the Pine is longer than that of the common Pitch or Red Pine of Virginia; the cone is longer and narrower, the imbrications are wider and thicker, and the whole is frequently covered with rosin," a good description of Pinus ponderosa.

On the Teton River (ii., 356) Captain Clark first noticed a "species of Cottonwood with a leaf like that of a Wild Cherry." This, as Dr. Coues points out, is the narrow-leaved Cottonwood of the Rocky Mountain region, Populus angustifolia, here first noticed, although it was not technically described until 1823, after its discovery in the southern Rocky Mountains by Long's expedition to Colorado. It was well described, however, by Lewis and Clark (ii., 364) in their entry of June 12th, when they found it mixed with the broad-leaved Cottonwood, which up to this time had formed the principal timber which they had seen on the banks of the Missouri River.

On July 19th, being in the basin of the Dearborn River and ascending the eastern slopes of the Rocky Mountains, the travelers found (ii., 424) that "the Pine-trees had been stripped of their bark about the same season, which our Indian woman says her countrymen do in order to obtain the sap and the soft parts of the wood and bark for food." This Pine-tree is probably Pinus ponderosa, as it is the bark of this species which was most generally eaten in time of famine by the Indians of the west. On the same day were seen on the mountains (ii., 425) "little copses of Pine, Cedar and Balsam Fir." The Balsam Fir is rightly referred to Abies subalpina or lasiocarpa by Dr. Coues. This is the first mention of the alpine Balsam Fir of the interior north-western region of the continent, with a range extending from Alaska to the Cascade Mountains in southern Oregon, Colorado and northern Arizona, unless this species was one of the Balsams noticed by Mackenzie some years earlier in British Columbia.

On August 3d, the party now being on the Jefferson River, a small species of Birch (ii., 457) was noticed among the shrubs bordering the stream, and described as having "a finely indented oval leaf of small size and deep green color; the stem is simple, ascending and branching, and seldom rises higher than the ten or twelve feet." This is the first account of Betula occidentalis, although the western Birch was not described technically until 1839. The mountains at this place are described as "high on each side of the valley, but their only covering is a small species of Pitch Pine with a short leaf, growing on the lower and middle regions, while for some distance below the snowy tops there is neither timber nor herbage of any kind." This Pine is considered by Dr. Coues to be Pinus flexilis, the Rocky Mountain White Pine, but this species could never have been mistaken for one of the Pitch Pines, and our

* *History of the Expedition under the command of Lewis and Clark.* A new edition by Elliott Coues. In 4 vols. Francis P. Harper. New York, 1893.

travelers, who were certainly familiar with the eastern White Pine, would have at once noticed its resemblance to that tree. It is more probable that they saw the Lodge Pole Pine, one of the forms of Pinus contorta, which is one of the commonest trees in this region.

Having crossed the continental divide and being on the waters of the Lemhi River, Captain Lewis found bushes of White Maple on the 13th of August (ii., 487), which Dr. Coues rightly refers to Acer glabrum, the only Maple of the Rocky Mountains with the exception, of course, of the Box Elder, which was well known to our travelers and which is quite generally distributed through all this region. Acer glabrum, which was discovered at this time, was technically described in 1824 by Dr. Torrey among the plants found by James in Colorado.

On the 23d of August Captain Clark reports on the Salmon River (ii., 532) tall Pine-trees suitable for the construction of canoes. This is another reference to Pinus ponderosa, which is the common and largest tree of the region. On September 3d (ii., 579), being then on Fish Creek, before reaching the Bitterroot valley and near the present boundary between Montana and Idaho, he reports the country as well supplied with Pine, and in the low ground "a great abundance of Fir-trees and underbrush." There is some doubt about the identity of these Fir-trees, but it is probably the Douglas Fir or Spruce (Pseudotsuga), which is not rare in this region. If this surmise is correct, it is the first reference in this work to this tree which later the party found abundant near the mouth of the Columbia River. On the 9th of September the travelers were crossing the Bitterroot Mountains by the Lolo Pass. Here they found the timber (ii., 596) "almost exclusively Pine, chiefly of the long-leaf kind, with some Spruce, and a species of Fir resembling the Scotch Fir." The long-leaved Pine is, of course, Pinus ponderosa. The Spruce is probably Picea Engelmanni, which would have been seen here then for the first time by white men; and the Fir "resembling the Scotch Fir" is clearly the Lodge Pole Pine. It may have been this tree which is spoken of as Spruce Pine in the entry of September 12th (ii., 593). Under the entry of September 16th (ii., 598), the party still being engaged in crossing the Bitterroot Mountains, the road was obstructed by "a growth of eight different species of Pine." These must have been Pinus ponderosa, Pinus contorta, Abies grandis, Abies lasiocarpa, Picea Engelmanni, Pinus flexilis, Pinus Monticola and Thuya gigantea, the evergreen trees which compose the forest of these mountains. Under the entry of September 20th reference is made to an Alder (ii., 605), referred doubtfully by Dr. Coues to Alnus incana. It is more probably the Alnus tenuifolia of Nuttall, who found it in the Blue Mountains of Oregon and described it in 1842 in the first volume of his *Sylva of North America*. This is the commonest Alder of the Bitterroot region. The Arbor Vitæ reported on this day (ii., 605) as very common and growing to a great size, being from two to six feet in diameter, is referred doubtfully by Dr. Coues to Thuya occidentalis. It is really the western Thuya gigantea, which ranges from the coast inland to the Bitterroot Mountains and the western slopes of the continental divide in northern Montana, and which, although it had been seen on the coast of British Columbia by Mackenzie in 1793, and by Menzies in 1796, was not described until 1834 by Nuttall.

The Hackberry seen on the 12th of October on the Columbia River (ii., 629), and referred by Dr. Coues to Celtis reticulata of Torrey, was more probably the thick-leaved form of Celtis occidentalis, which is not rare in the north-west, Celtis reticulata being a tree of the south-west, and now usually considered a geographical form of Celtis Mississippiensis. On the Columbia they observed the fruit of the White Oak, Quercus Garryana (ii., 654), used as food by the Indians, who told them they had procured it from a tribe living near the great falls of the Columbia, where this tree is still common, and where our travelers saw it on the 29th of October growing on hills near the mouth of the Klikat River, in company with a Pine, which is still Pinus ponderosa. Near the mouth of Wind River, Oregon, which is just above the town of Sprague, and which Lewis and Clark called "New Timber River, from a species of Ash which grows on its bank, . . . and a timber resembling the Beech in bark, but different in its leaf, which is smaller" (ii., 679). The Ash is Fraxinus Oregona, which grows to a large size on the lower Columbia River. The new timber Dr. Coues unhesitatingly called the Broad-leaved Maple, Acer macrophyllum, but the large and deeply lobed leaves of that tree could never have been mistaken for the leaves of the Beech. The bark of Alnus rhombifolia has some resemblance to that of the Beech-tree, and the leaves are not very unlike Beech leaves in outline. There is certainly no other tree on the Columbia with Beech-like leaves.

The Spruce Pine seen on November 2d (ii.,,688) near the Columbia below tide-water, growing with Pine, Cottonwood, a species of Ash and some Alder, was probably Pseudotsuga, and the Cottonwood is Populus tricocarpa, which is the species of the lower Columbia, and which our travelers had not noticed before. The Pine seen here in low ground is probably Pinus contorta. The Ash is Fraxinus Oregona, the only species of the region, and the Alder, either Alnus Oregona or Alnus rhombifolia.

On the lower Columbia, in the entry of November 4th (ii., 693), the Wild Crab was noticed growing near the river. This is the first mention made by Lewis and Clark of Pyrus rivularis, which had been discovered a few years earlier by Archibald Menzies. On November 13th (ii., 706), when the party was near the mouth of the Columbia, they found that "the whole lower country was covered with almost impenetrable thickets of small Pine, with which is mixed a species of plant resembling Arrow-wood, twelve or fifteen feet high, with a thorny stem, almost interwoven with each other, and scattered among the Fern and fallen timber." The Pine may have been Pinus contorta. Dr. Coues refers the thorny plant to Cratægus rivularis. This, however, is a species of the interior; it may have been Cratægus Douglasii, or Pyrus rivularis, which grows in low ground and is often beset with short lateral, thorn-like branchlets.

On the 18th of November (ii., 712) Pine-trees were seen "three or four feet in thickness growing on the bodies of large trees, which, though fallen and covered with moss, were in part sound." This is a familiar sight in the forests of the north-west coast, where the seeds of several conifers, especially of the Hemlock, Tsuga Mertensiana, germinate most readily on the trunks of fallen trees. Having crossed from the north to the south bank of the Columbia on November 26th (ii., 722), they found a "thick growth of Pine, Balsam and other timber." The Balsam here is Abies grandis, which the travelers had seen for the first time in descending the western slope of the Bitterroot Mountains. In describing the country in the neighborhood of the winter camp south of the mouth of the Columbia, under entry of November 30th (ii., 724), they say, "the hills along the coast are high and steep; the general covering is a growth of lofty Pines of different species, some of which rise more than two hundred feet, and are ten or twelve feet in diameter near the root." The only trees which attain this size in this region are Picea Sitchensis, Pseudotsuga taxifolia and Thuya gigantea. They noticed here a plant which is called "Laurel," which Dr. Coues considers to be Rhododendron Californicum (not Californianum), but it is quite possible that by "Laurel" was intended Arbutus Menziesii, which is a conspicuous small tree in the coast region at this point.

On the 13th of December (ii., 734) the party were engaged in building huts for their winter quarters, and were rejoiced to find that "the beautiful Balsam Pine splits into excellent boards more than two feet in width." The Balsam Pine is here referred by Dr. Coues to Pseudotsuga, but the wood of that tree does not split particularly easily, and the planks were probably obtained from Abies grandis, which is abundant here. It is a tree much more readily felled than Pseudotsuga and the wood splits easily.

C. S. S.

Notes.

Under an act of the Legislature the College of Agriculture, at Cornell, offers to give farmers the advantages of the University Extension movement. Any farmer may address Professor Bailey and receive a plan for a course of reading for winter evenings upon topics relating to agriculture, and after reading there can be a discussion with the college. As the spring opens, some simple experiments will be suggested to all readers by which they can test the truth of the principles taught, and there is no expense connected with the work.

An examination for gardeners will be held by the Civil Service Board on January 29th, at the office of the Commission, at ten o'clock, A. M. All persons who desire to try for the position of gardener in the public parks of this city should make application to S. William Briscoe, Secretary of the New York City Civil Service Commission, for blanks, the filling of which will entitle them to examination. Persons who have large experience in general gardening and nursery practice are desired, and every candidate will be required to give letters of recommendation from previous employers.

The American Florist reports that from all the important cities during the late holiday season there was a general increase in the sale of plants for holiday gifts as compared with that of cut flowers, and the tendency seems to be more toward the arrangement of plants rather than of cut flowers for the decoration of tables and mantels. This change is attributed partly to the excessive price of flowers which are held in cold storage for holidays and other occasions when there is a large demand for them. Perhaps, however, a sufficient reason will be found in the fact that for many purposes entire plants are a great deal more effective, as they certainly are more enduring.

Mr. George Monro, a fruit dealer in Covent Garden, writes to *The Gardeners' Chronicle* in reference to a statement made in that paper, that the bulk of the fruit sold in England is foreign-grown, to say that while this is quite true as applied to apples and oranges, there never were so few foreign grapes sold in the English markets. Almeria grapes used to be the staple article for Christmas trade, but English growers now furnish a better article in such quantities as to make consumers of the best class quite independent of foreigners. Mr. Monro adds that for four days preceding Christmas he sold four thousand baskets of English grapes, weighing twenty-two tons and a half, and he adds that English growers are now turning the tables on foreigners by sending regularly to America, and almost daily to the Continent, consignments of cucumbers and grapes.

The city of Los Angeles has just come into possession of land which may become one of the most interesting pleasure-grounds in the world. The tract of three thousand acres is situated along the Los Angeles River about a mile north of the city limits, and comprises a rich diversity of soil and surface. It has been known as the Rancho los Feliz, the property of Griffith J. Griffith, Esq., who has presented it to the city of his adoption with the single restriction that if a charter is granted for a railroad to the park from the town a single fare shall be limited to five cents. Part of the land lies within what is called the frostless belt, and it rises over foothills and a mountain slope from whose summits there is a magnificent view, including the city and the sea. Altogether it is a royal gift, and it is to be hoped that the city will appreciate it and see that the natural beauty of the place is not marred by the handiwork of unskilled park makers.

As attractive and toothsome as any of the many table luxuries in the stock of high-class fruiterers and grocers are such choice dried fruits as Malta dates. These come neatly packed in fancy boxes holding a pound of the fruit on one stem, and cost fifty cents. Small boxes of stuffed dates, the kernel of a Pecan nut being substituted for the seed, cost twenty-five cents. Large Smyrna figs, tightly pressed into wooden boxes, cost thirty cents a pound. Carefully selected "pulled figs," known as Royal Locoum, from Turkey, their natural form retained, cost thirty-five cents a pound, and extra-large pulled figs, sixteen of the fruits to a pound box, sell for fifty cents. Square packages, holding four pounds of choice layer figs in attractive silk covers, cost $1.50. Extra-sized California prunes may be bought for fifteen cents a pound; choice French prunes, esteemed for their rich flavor and more tender skin, cost twenty-five cents a pound in bulk and forty cents in glass jars. Wiesbaden stuffed prunes, the seed space filled with the flesh of other prunes, are regular articles in trade. Malaga cluster raisins of the high grade known as Five Crown, cost $1.60 for a five-pound box, or thirty-five cents for a single pound, while the best California raisins cost twenty cents a pound.

General C. A. Andrews, Chief Fire Warden of Minnesota, in an address before the Forestry Association of that state on January 14th, said that during the dry weather in 1895 and 1896, although the seasons were not as dangerous as that of 1894, there were many forest fires, most of which were soon under the control of the fire wardens. He thinks that, owing to the number of new settlers going into the forest regions to open farms, the danger of fires will increase, and the important thing will be to prevent any of them from becoming serious. He argues that it is easy to prevent forest fires in Germany, because every one there is taught in the public schools enough of forestry to give him a knowledge of the value of forests to the country; and inasmuch as forest preservation is best promoted and forest fires most certainly prevented by diffusing a knowledge of forestry and creating an intelligent interest in it, he suggests as a good plan that some of the elementary principles of practical forestry be taught in all the public schools of the state.

In a Farmers' Bulletin on "Irrigation in Humid Climates," by Professor King, it is stated that although the total rainfall in western and southern Europe is materially less than it is in the eastern United States, we must bear in mind that our summer temperature and amount of sunshine are both higher, that the air is less moist, and that under these conditions water is lost from the soil more rapidly by evaporation than it is in Europe, and, no doubt, irrigation might be practiced to as good advantage here as there. In Europe there have been irrigating canals since the invasion of the Moors, and in England there are water meadows so old that no one seems to know their origin. In those places where water is artificially supplied it is thought that the fertility added to the soil is the chief advantage derived from the practice, and for this reason large volumes of water are run over the land during the winter or when it is not occupied by a crop; and, no doubt, it is true that in river water there is much matter of fertilizing power, and that it is more valuable, pound for pound, than solid fertilizers which we buy, because it is already in solution and ready to be taken up immediately. The water meadows of England have been in service without rotation and without the application of fertilizers of any kind for probably five hundred years and they are as productive to-day as ever. These lands are valued very highly because they can be watered for less expense than it would cost to haul manure upon them, even if this could be had for nothing. The crops are absolutely certain, and with from twenty to forty acres of such meadows unirrigated lands can be maintained in a high state of productiveness through the use of the manure made from the product of the meadows.

Among dainty flowers for house decoration displayed in the best shops are branches of white-flowered Almond, the neat little flowers densely set among delicate new leaves. Flowers of the pink variety of the same shrub are also offered, and of the more showy Japan Quince, with masses of Forsythia profusely covered with its yellow bells. Glossy brown shoots of Pussy Willow, dotted with mouse-colored, downy catkins, are shown, and, less freely, apple-twigs in blossom. A well-furnished vase of branches of any one of these forced flowers costs $5.00. Carnations are now in splendid form; among large, vigorous flowers of many varieties those of the comparatively new Lillie Dean are strikingly handsome; the irregular arrangement of the broad white petals, dashed with red, forms a large bold flower, and the calyx is remarkably good. These sell for $1.00 a dozen, the price for other varieties ranging from fifty cents to $1.00. Orchids are lavishly used in some of the window arrangements of first-class floral establishments, but the display is not so extravagant as it appears, since the same flowers which win the admiration of passers-by in the fashionable promenade hours of the day are used in dinner decorations in the evening. Cut flowers of Cypripedium insigne and Dendrobium nobile cost twenty-five cents each, and of Cattleya Gigas twice that amount, and sprays of Odontoglossum maximum $2.00 to $3.00, according to the number of blooms carried. Flowers of Amaryllis, Lilium Harrisii and L. auratum are offered at $3.00 a dozen, and Calla lilies cost $1.00 to $1.50. Among the roses excellent flowers of General Jacqueminot are occasionally seen, but, of course, Bride, Bridesmaid, Meteor and American Beauty are the principal varieties sold, and, like all other flowers, large lots have been selling at remarkably low prices.